

While the use of the Wassermann reaction in the diagnosis of syphilis has been largely replaced by various types of flocculation tests, the principle of complement fixation is now widely used in the

diagnosis of such diseases as the psittacosis group of viruses, lymphogranuloma venerum, murine and epidemic typhus, Q fever, amebiasis, histoplasmosis, and some others.

Community Fly Control Operations - Oklahoma, 1950

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From a small beginning in 1949, when several cooperative community fly control insecticidal projects were operated in Oklahoma, a comprehensive over-all plan of promotion and operations has been developed. In the conception of a plan for State-wide development of these activities, promotional policies have been based upon a realistic acceptance of public interest in the spectacular nature of insecticidal control. This interest has been deliberately fostered as a direct means of focusing attention on community and individual premises environmental conditions. Spot maps indicating number of fly attractants and breeding sources found in reconnaissance sanitary surveys have been effectively used in promotion of premises sanitation and improvements in garbage collection and disposal.

FLY CONTROL TRAINING COURSE

Local health departments were selected as the logical agency for handling detailed promotion and technical supervision of local operational activities. In order to develop the interest of local health department sanitation personnel, and to better qualify them for technical direction of proposed local activities, a Fly Control Training Course was organized with the cooperation of Training Services Headquarters, CDC, and The School of Public Health, University of Oklahoma. The course was conducted at the Extension Study Center, University of Oklahoma, Norman, Okla., May 8-11, 1950. Approximately 50 certificates

were issued for attendance at the training course. These included, in addition to county sanitarians, one sanitary engineer from the State Department of Health, six students from the University School of Public Health, two representatives from Arkansas CDC Activities, and one county health officer.

1950 FLY CONTROL OPERATIONS

Full-scale development of planned 1950 operations was somewhat complicated by excessive rainfall during July and August. It was anticipated that chemical insecticidal operations would not begin until the latter part of June or until early July when equipment would be available from the DDT Malaria Eradication residual spray program. Approximately 20 towns were either operating or in the process of beginning operations at the close of the fiscal year. Official weather reports showed 23 days of rainfall during July, and these general rains continued into August. This unseasonable weather not only interfered with operating projects but also served to reduce fly populations so that much of the need for extensive chemical insecticidal operations was obviated.

Despite these difficulties, a sufficient number of projects were operated to gain experience and develop refinements of procedure to formulate more comprehensive plans for full future projection of the activity on a State-wide basis.

PROMOTIONAL PROCEDURES

An outstanding factor in formulating promotional plans for this activity has been the lack of necessity for developing public interest and demand. Rather, the problem has been to channel existing interest in chemical control into public

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interest in the correction of community environmental conditions that create the fly problem.

The two most effective methods of developing this public interest in community environmental sanitation have been as follows: (1) a sanitary reconnaissance survey to obtain statistical data on the number of fly attractants and breeding sources, garbage storage, and collection and disposal practices; and (2) use of an organized series of color slides showing actual local conditions favorable for fly breeding.

SANITARY RECONNAISSANCE SURVEY

The sanitary reconnaissance survey was designed to obtain basic information for both promotion and future operational activities. The Garbage and Refuse Disposal Report form devised by CDC Typhus Control Section is used for recording garbage collection and disposal data. A coded record form devised by the State CDC Entomologist (figure 1) is used to record all data on fly attractants and breeding places in each block. Data thus accumulated are tabulated and used for local publicity and preparing maps for use in talks before local officials and civic groups.

The local health department is furnished with an analysis of inadequacies of community garbage storage, collection, and disposal practices, and also with specific recommendations for corrections and improvements.

In order to simplify mapping procedure, the best locally available map is utilized. The city is subdivided into zones, taking advantage of existing ward divisions where possible. Zone lines are drawn to group blocks of similar socio-economic conditions. Data on fly attractants and breeding situations are used for classifying blocks according to their potential fly infestation. Colored cellulose tape is used to graphically show these block classifications on the map.

ORGANIZED SERIES OF COLOR SLIDES

A promotional technique, developed by one of the county sanitarians, which was widely adopted and effectively used by a number of local health departments was an organized series of color slides showing actual local conditions. Such series are usually organized to show outstanding conditions of which the community is justifiably proud, such as modern public buildings, fire departments, street equipment, and high class residential areas. This is followed by the "other side of the picture" showing open garbage dumps, inadequate garbage collection equipment, open garbage containers, slum areas, and stock barns.

These slides with appropriate running comments are shown to civic, church, and official groups. The plan is being rounded out by sets of slides furnished by CDC Headquarters showing sanitary landfill operations. These latter sets will be circulated by the State Central Office to supple-

Figure 1
FIELD RECORD OF FLY ATTRACTANTS AND BREEDING PLACES

Ward or Zone _____ City _____ Inspector _____ Date _____
Temperature Range _____ Precipitation _____ Wind _____

Block	Place		Attractant				Conditions			Time	Fly Count	Notes
	10	20	30	40	50	60	70	80	90			

PLACE - 10. Outside: 11. Street or alley; 12. Ditch or drain; 13. Yard; 14. Animal pen; 15. Other.
20. Inside: 21. Privy; 22. Animal shelter; 23. Residence; 24. Business building; 25. Other.
ATTRACTANT - 30. Excreta: 31. Human; 32. Horse-mule; 33. Cow; 34. Fowl; 35. Other. 40. Garbage: 41. Mixed; 42. Vegetable; 43. Animal; 44. Dish water; 45. Other. 50. Refuse: 51. Mixed; 52. Manufactured (papers, boxes, cans, bottles); 53. Natural (grass, leaves, brush); 54. Dead animal; 55. Other.
60. Commercial Wastes: 61. Slaughterhouse; 62. Cannery; 63. Grain mill; 64. Brewery; 65. Other.
CONDITIONS - 70. Amount: 71. Bushel or less; 72. Bushel to barrel; 73. Barrel or more. 80. Accumulations: 81. Scattered; 82. Pile; 83. Open container; 90. Decay: 91. Fresh; 92. Stale; 93. Putrefied.

Indicate 1 Type of place, 1 type of attractant, all 3 conditions for each entry.

Oklahoma State Department of Health, Bureau of Sanitary Engineering, CDC Activities.

ment local slide series.

SANITATION ADVISORY COUNCILS

An outstanding example of effective use of two basic promotional plans to develop community interest and backing for a fly control program was the organization of a permanent Sanitary Advisory Council composed of representatives of civic clubs, the PTA, and other civic-minded groups in Wewoka (Seminole County). The County Sanitarian first requested each civic organization to name a representative to work with him as an informal Fly Control Committee. The original idea for this group was to organize a "speakers bureau" for disseminating information collected in the sanitary reconnaissance survey. Group discussions of the local sanitation problems aroused such keen interest among those participating that it resulted in a permanent organization to act in an advisory capacity to the County Sanitarian. The effectiveness of this influential group no doubt will result in organization of similar groups throughout the State.

FINANCING LOCAL OPERATIONS

Under the somewhat unusual tax structure of Oklahoma, a constitutional limitation of 15 mills has been placed on ad valorem taxes that may be levied within each county. This limitation includes ad valorem taxes for all purposes, including the cities and schools in the county. Consequently, incorporated cities and towns are forced to depend almost entirely for revenue on municipally owned utilities and levies for special purposes such as garbage collection fees and sewer fees. This situation has, somewhat paradoxically, greatly simplified local financing of fly control operations, as well as furnished a precedent for additional financing of improvements to garbage collection and disposal systems. The majority of the projects are being financed from special charges added to the water bill or special levies in the garbage collection fees to include Fly Control Operations.

In order to assist some of the communities in their original financing, the State Department of Health set up a revolving fund for purchase of chemicals for resale to local communities. Approximately \$8,500.00 worth of chemicals were supplied through this revolving fund. Equipment maintenance and special technical supervision furnished for local programs were financed by a per diem maintenance charge for the use of vehicles and equipment. Under this operation plan, the entire cost of the program is locally financed except for over-all technical supervision

by State Office CDC personnel.

CDC PROMOTIONAL AND TECHNICAL GUIDANCE

Over-all planning, program development, and technical consultation service have been supplied by State Office CDC personnel. District CDC supervisors cooperated with local health departments in program promotion and in crew training and technical supervision of local programs. Two of the district supervisors were discontinued on CDC pay roll by reduction in force on June 30, 1950. These two supervisors were retained on State pay roll through September and continued the same activities. CDC vehicles and equipment were used on a loan basis by local communities. Approximately 400 days' actual operational use was made of this equipment.

Tables 1 and 2 show detailed data on operations in which CDC personnel actively participated in a technical or promotional capacity.

Local financing of the projects naturally involves a much greater degree of local autonomy than would exist where considerable State or Federal financial participation is involved. Wide variations in local operations evident in tables 1 and 2 are inherent in the plan of operations. In some communities minimum chemical treatments were used, while in other communities local officials insisted on considerably more premises treatment than would have been necessary. This situation will, no doubt, be gradually improved as local officials gain more experience.

STANDARD RECOMMENDATIONS FOR INSECTICIDAL TREATMENTS

Widespread use of DDT in 1948 and 1949 had resulted in marked DDT resistance in the fly populations of Oklahoma, especially in the Southeastern counties where CDC Malaria Eradication Activities were concentrated. Chlordan residual treatment was effectively used on several of the 1949 cooperative community fly control projects where DDT-resistant strains of flies were present. Consequently, CDC recommendations for chlordan formulations were adopted as standard recommendations for 1950 operations. All communities, except as noted in table 1 used 2½ percent chlordan solutions or emulsions for space spraying. Residual spray treatments were 1¼ percent emulsion, applied with 5004 "Teejet" nozzle at 40 p.s.i. (100 mg/sq. ft.).

EQUIPMENT

According to best available information,

Table 1

CHLORDAN SPACE SPRAYING*

Community	Type Equipment	Blocks Treated	Gallons Solution	Total Man-hours Labor	Per Block	
					Gallons Concentrate	Man-hours Labor
Norman**	TIFA	12,744	7,450	448	0.580	0.035
Lawton***	TIFA	1,983	1,835	109	0.925	0.055
Hobart	TIFA	850	1,600	193	1.880	0.230
Snyder	Exhaust Gen.	160	200	38	1.250	0.240
Loneway	Exhaust Gen.	50	85	24	1.700	0.480
Muskogee	Lawrence	1,065	3,988	432	3.740	0.405
McAlester	TIFA	1,691	2,565	218	1.510	0.130
Shawnee†	TIFA	3,527	4,788	480	1.360	0.136
State Total		22,070	22,511	1,942	1.020	0.088

*Alley fogging was carried out in the following communities using CDC vehicles equipped with exhaust aerosol generators: Atoka, Blaine County (7 communities), Hugo, Heavener, Idabel, Broken Bow, Haileyville, Antlers, Wewoka, and Tulsa County (5 communities). Reports for city of Tulsa were incomplete and not included in this report.

**Norman used DDT-chlordan-diesel solution (strength not reported).

***Lawton used 25 percent DDT-2 percent pyrethrins concentrate diluted 6 to 1 in diesel fuel.

†Shawnee used 5 percent DDT-diesel solution.

Table 2

CHLORDAN RESIDUAL SPRAYING

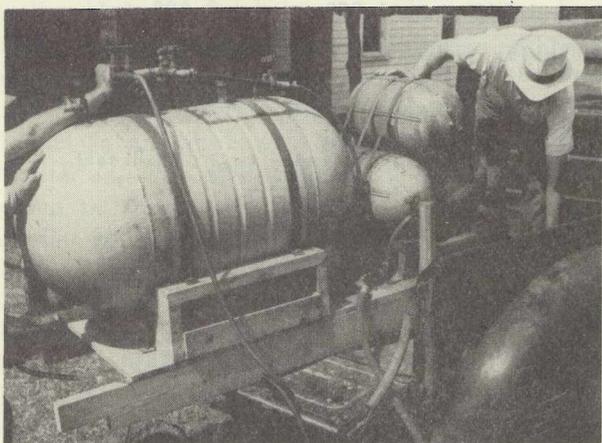
Community	No. Vehicles		Premises Treated	Gallons 40% Concentrate	Man-hours Local Labor	Per Premises	
	CDC	Local				Gallons Chemical	Man-hours Labor
Atoka	1		964	116	360	0.120	0.373
Blaine County*	1		1,825	110	380	0.055	0.208
Durant**	1	1	880	62	336	0.070	0.381
Hugo**	2		1,912	175	728	0.090	0.380
Hobart	1		280	47	111	0.170	0.396
Heavener	1		1,300	194	559	0.150	0.430
Talihina	1		220	70	167	0.318	0.759
Idabel**	1		1,875	80	454	0.043	0.242
Broken Bow**	1		551	26	200	0.047	0.363
Checotah		1	240	22	96	0.092	0.400
Eufaula		1	815	66	430	0.081	0.527
Okfuskee County***	1		422	80	376	0.190	0.890
McAlester**	1		740	33	159	0.044	0.215
Quinton	1		313	44	208	0.140	0.664
Krebs	1		507	80	419	0.160	0.826
Haileyville	1		350	54	244	0.154	0.697
Stuart	1		133	20	72	0.150	0.540
Antlers	1		1,287	103	448	0.080	0.348
Wewoka**	2		1,833	112	458	0.060	0.250
Tulsa County†	1		1,955	75	642	0.040	0.328
Sand Springs	1		2,205	100	622	0.045	0.282
State Total			20,607	1,669	7,469	0.080	0.362

*Blaine County - 7 communities.

**Sanitary survey made prior to spray operations.

***Okfuskee County - Rural premise spraying.

†Tulsa County - 5 communities.



Portable residual spray unit fabricated in Oklahoma State CDC shops for use on Eufaula, Okla., community fly control program.

ABOVE Spray unit in operation.

LEFT Close-up of unit. Large tank contains emulsion—3 smaller ones are air reservoirs.

approximately 25 Oklahoma communities owned and operated space spray equipment for fly control during 1950. Only those operations directed by local health departments on the State-wide Community Fly Control Program are included in this report.

Practically all communities operating residual spray programs utilized the CDC trucks equipped with constant pressure spray units. The spray units are adaptations of the units developed on the Tennessee and North Carolina Malaria Control Residual Spray Activities.

Exhaust aerosol generators were installed on most of this equipment. All of the spray equipment was fabricated in the CDC shops.

SYSTEMATIC VISUAL INSPECTIONS AS A GUIDE FOR LOCAL FLY CONTROL PROGRAMS

Probably the most useful control technique developed during the season's operations was the adoption of visual inspection for guidance and evaluation of community fly control programs. After a considerable amount of trial with various random sampling methods (fly grills, tanglefoot

plates, and other devices) used in measuring fly populations, visual inspection was selected as most adaptable for use on Oklahoma operations. Visual inspection offers the advantages of simplicity, rapidity, complete coverage of all blocks, and economy of control, obtainable by constantly surveying the distribution of the real sources of fly production.

The visual survey techniques described in CDC publications were simplified for use by relatively untrained local personnel. In normal operations only house flies and their close relatives (blowflies and fleshflies) are counted. Another variation in Oklahoma practice is the use of the highest single fly count in a block to determine the block index rather than an average of a definite number of counts per block. Blocks are classified as A, B, and C with high count index classifications of 0-9, 10-24, and 25 plus, respectively.

Complete development of this system of evaluation and guiding control operations was greatly hampered by the unusual weather conditions, but the records on the McAlester study project indicate that considerable economies can be effected in chemical control by full adoption of the visual inspection method. It also serves to definitely locate the most important foci of fly production, thus permitting intelligent concentration of sanitation activities.